



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

NOV 01 2017

Mr. Thomas Frick
Director
Division of Environmental Assessment & Restoration
Florida Department of Environmental Protection
Mail Station 3000
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Frick:

The U.S. Environmental Protection Agency has completed its review of the document titled *Nutrient TMDLs for Lochloosa Lake (WBID¹ 2738A) and Cross Creek (WBID 2754)*. Florida Department of Environmental Protection (FDEP) submitted the Lochloosa Lake and Cross Creek Total Maximum Daily Loads (TMDLs) and revised chapter 62-304, Florida Administrative Code (F.A.C.),² including the numeric nutrient criteria (NNC) for the subject waters, in a letter to the EPA dated June 19, 2017, as TMDLs and as new or revised water quality standards (WQS) with the necessary supporting documentation and certification by FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under paragraphs 62-304.500(24)-(25) as site specific numeric interpretations of paragraph 62-302.530(48)(b).³ As referenced in paragraph 62-302.531(2)(a), FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for lakes set out in paragraph 62-302.531(2)(b) and for streams set out in paragraph 62-302.531(2)(c). The total nitrogen, total phosphorus, and chlorophyll *a* TMDLs for Lochloosa Lake and Cross Creek would also constitute site specific numeric interpretations of the narrative nutrient criteria set forth in paragraph 62-302.530(48)(b), for these waterbodies.

FDEP submitted the Lochloosa Lake and Cross Creek TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as a Hierarchy 1 (H1) site-specific interpretation of the state's narrative nutrient criteria pursuant to 62-302.531(2)(a)1.a. The EPA acknowledges that by virtue of establishing the TMDLs in chapter 62-304, FDEP is also establishing an H1 interpretation of the narrative nutrient criterion for this waterbody as new or revised WQS. The enclosed, combined WQS and TMDL decision document summarizes the EPA's review and approval of the WQS and TMDLs.

¹ WBID refers to waterbody identification.

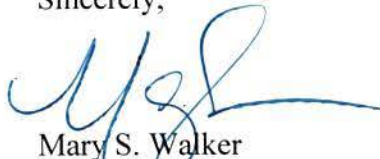
² Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

³ FDEP recently revised the table of surface water criteria set out in paragraph 62-302.530, adding parameters to the table to incorporate new human health criteria promulgated by the state in 2016. These additions resulted in the state narrative nutrient criteria being renumbered from paragraphs 62-302.530(48)(a) and (b), to paragraphs 62-302.530(90)(a) and (b). The new criteria have not yet been submitted to the EPA for review under the CWA and are not effective for CWA purposes. In this document, the EPA refers to the narrative nutrient criteria as paragraphs 62-302.530(48)(a) and (b).

In accordance with sections 303(c) and (d) of the CWA, I am hereby approving the TMDLs promulgated in chapter 62-304 for Lochloosa Lake and Cross Creek as both TMDLs and as revised WQS for total nitrogen, total phosphorus, and chlorophyll *a*. The requirements of paragraph 62-302.530(48)(a) remain applicable.

If you have any comments or questions relating to the approval of the H1 WQS or TMDLs, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840 or Ms. Laila Hudda in the TMDL program at (404) 562-9007.

Sincerely,



Mary S. Walker
Director

Water Protection Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP
Ms. Stacey Cowley, FDEP
Mr. Daryll Joyner, FDEP
Ms. Erin Rasnake, FDEP

Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to establish a Hierarchy 1 (H1): Joint Water Quality Standards (WQS) and TMDL Decision Document

H1: Nutrient TMDLs for Lochloosa Lake, waterbody identification (WBID) 2738A, and Cross Creek, WBID 2754

ATTAINS TMDL ID: 67544

Location: Alachua County, Florida

Status: Final

Criteria Parameter(s): Lochloosa Lake: total nitrogen (TN) = 78,163 kg/yr and total phosphorus (TP) = 4,505 kg/yr, expressed as the long-term (7-year) average of annual loads, not to be exceeded. Chlorophyll a (Chla) = 38 µg/L, expressed as a long-term (7-year) average of the annual geometric means (AGM), not to be exceeded. Cross Creek: TN = 32,514 kg/yr and TP = 1,601 kg/yr, expressed as the long-term (7-year) average of annual loads, not to be exceeded. Chla = 38 µg/L, expressed as a long-term (7-year) average of the AGMs, not to be exceeded.

Impairment/Pollutant: Two waterbodies, Lochloosa Lake and Cross Creek, in the Ocklawaha River Basin are not meeting water quality criteria for nutrients and not supporting the designated uses of fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. An H1 was submitted by Florida Department of Environmental Protection (FDEP) that establishes site-specific criteria for TN & TP and provides loads to address the impairment.

Background: FDEP submitted the “Final H1 for the Nutrient TMDL for Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Criterion” (the “H1,” “TMDL,” or “Report”) by letter dated June 19, 2017. The draft H1 for Lochloosa Lake and Cross Creek is dated February 2016 and the revised draft H1 is dated January 2017. The final Lochloosa and Cross Creek H1 is dated May 2017 and was delivered in person to the EPA R4 staff for review and approval on June 28, 2017.

The submission included:

- Submittal letter
- Nutrient TMDL for Lochloosa Lake and Cross Creek and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption
- Public Comments Received

This document explains how the submission meets the Clean Water Act (CWA) statutory and regulatory requirements for the approval of WQS under section 303(c) and of TMDLs under section 303(d), and the EPA’s implementing regulations in Title 40 of the Code of Federal Regulations (CFR) parts 131 and 130, respectively.

REVIEWERS: WQS: Jamal Cooper, Environmental Engineer, cooper.jamal@epa.gov
TMDL: Laila Hudda, Florida TMDL Coordinator, hudda.laila@epa.gov

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

Waterbodies addressed in this H1 Approval Action: Lochloosa Lake is a 5,663-acre lake in the southeast corner of Alachua County (Figure 1). Cross Creek is a freshwater stream 1.5 miles long, connecting Lochloosa Lake with Orange Lake, with 95% of the flow in the creek coming from the outflow from Lochloosa Lake. Most of Lochloosa Lake is surrounded by the Lochloosa Wildlife Conservation Area, which covers more than 10,300 acres, and an adjacent 16,600-acre conservation easement, for a total of 27,000 acres.

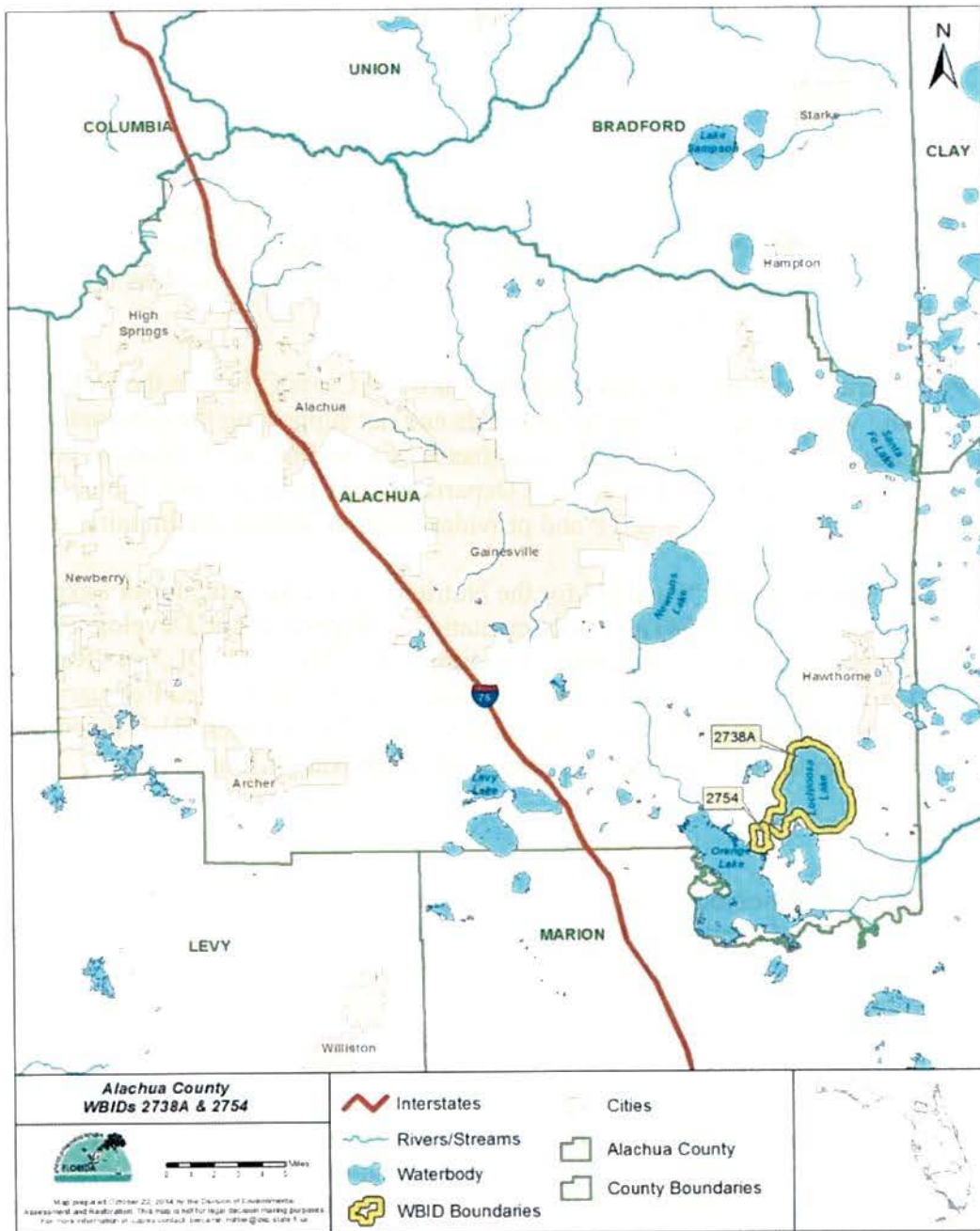


Figure 1. Location of the Lochloosa Lake and Cross Creek watershed in Alachua County and major geopolitical and hydrologic features in the area.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

This document contains the EPA's review of the above-referenced H1. This review document includes WQS and TMDL review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable H1s. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.

I. WQS Decision – Supporting Rationale

Section 303(c) of the CWA and the EPA's implementing regulations at 40 CFR section 131 describe the statutory and regulatory requirements for approvable WQS. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.

1. Use Designations

Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.

Assessment: Lochloosa Lake and Cross Creek are classified as Class III Freshwater (fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

2. Protection of Downstream Uses

Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQS of downstream waters and shall ensure that its WQS provide for the attainment and maintenance of the WQS of downstream waters.

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. The primary outlet from Lochloosa Lake is Cross Creek, which connects Lochloosa Lake to Orange Lake. Cross Creek is on the Verified List of Impaired Waters for nutrients, as Chla, and dissolved oxygen (DO) impairments. The immediate watershed of Cross Creek is small, and water quality in Cross Creek is dominated by discharge from Lochloosa Lake. Achieving the TMDL nutrient reductions in Lochloosa Lake will result in a 31% reduction in the current load of TP and a 43% reduction in the current load of TN transported through Cross Creek to Orange Lake.

For comparative purposes, the Lochloosa Lake nutrient criteria of 1.15 mg/L for TN and 0.055 mg/L for TP are less than the Peninsular Nutrient Watershed Region stream nutrient criteria of 1.54 mg/L for TN and 0.12 mg/L for TP. Both the Peninsular Nutrient Watershed Region stream criteria and the Lochloosa Lake nutrient targets are expressed as AGMs, not to be exceeded more than once in a 3-year period. Since the TMDL nutrient targets are lower than the stream nutrient criteria for the area and are expressed with a similar frequency, the TMDL targets are expected to be protective of the applicable stream criteria. In addition, the concentration targets established for Lochloosa Lake represent the natural background condition. When these concentration targets are achieved, the nutrient loads going

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

through Cross Creek will be the background condition loads. Therefore, both flora and fauna in Cross Creek will be protected.

Orange Lake was verified impaired for nutrients (target tropic state index (TSI) > 60) in the Cycle 1 assessment, and TMDLs were adopted in 2003. The Orange Lake TMDL determined that a 45% reduction in TP loading to Orange Lake was necessary to meet a TSI of 60. According to the TMDL, the mean of annual average TP concentrations from 1995 to 1998 was 0.062 mg/L. Annual TP loads from Cross Creek in 1995, 1996, and 1997 averaged 2,570 lb/yr, which represented 7% of the total load to Orange Lake. In 1998, the TP load from Cross Creek was 13,472 lb, which represented 25% of the total TP to Orange Lake.

The reductions in nutrient loads prescribed in the Lochloosa Lake and Cross Creek TMDLs are not expected to cause nutrient impairments downstream and are expected to result in water quality improvements to downstream waters. While the Orange Lake TMDL requires a 46% reduction in TP, and the proposed Lochloosa Lake and Cross Creek TMDLs require the TP load through Cross Creek be reduced by 31%, the required TP reductions for the Lochloosa Lake and Cross Creek watersheds are related to the natural background condition. Further reduction of TP loads from the Lochloosa Lake and Cross Creek watersheds will abate the natural background condition.

In addition to identifying Cross Creek as a source of TP loading to Orange Lake, the Orange Lake TMDL identified the Camps Canal, Camps Canal/River Styx, and Orange Lake sub-basins as additional sources. Annual TP loads from Camps Canal in 1995, 1996, and 1997 averaged 8,622 lb/yr, which represented 24.6% of the total load to Orange Lake. In 1998, the TP load from Camps Canal was 22,786 lb/yr, or 42% of the total TP to Orange Lake. Nutrient reductions based on the adopted Newnans Lake nutrient TMDLs will reduce loads entering Orange Lake via Camps Canal. Contributions of TP from the Camps Canal/River Styx and Orange Lake sub-basins represented between 20% and 52% of the TP load to Orange Lake over the 1995–98 period.

In addition to the 31% reduction in the TP load from Cross Creek to Orange Lake, reductions from the other sources (Camps Canal, Camps Canal/River Styx sub-basin, and Orange Lake sub-basin) will be necessary to meet the Orange Lake TMDL.

Assessment: The document adequately describes how the H1 protects downstream uses.

3. Water Quality Criteria

Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

The nutrient criteria for Lochloosa Lake and Cross Creek are the TN and TP loads and Chla concentration established in the nutrient TMDLs for the lake and creek. Those targets are long-term (7-year) averages of annual loads, not to be exceeded, of 78,163 kg/yr for TN and 4,505 kg/yr for TN for Lochloosa Lake and 32,514 kg/yr for TN and 1,601 kg/yr for TP for Cross Creek. A Chla target of a long-term (7-year) average concentration of the AGMs, not to be exceeded, of 38 µg/L is established for

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

both the lake and creek. The revised Chla target will also replace all other default stream floral metrics for Cross Creek. Any other criteria applicable to these waterbodies remain in effect.

Assessment: The document adequately describes how the H1 protects designated uses.

4. Scientific Defensibility

Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods

Because the long-term geometric mean color of Lochloosa Lake exceeds 40 platinum cobalt units (PCU), the lake is classified as a colored lake, and the generally applicable numeric nutrient criteria (NNC), which are expressed as AGM concentrations, not to be exceeded more than once in any consecutive 3-year period, are Chla of 20 µg/L, TN of 1.27 to 2.23 mg/L, and TP of 0.05 to 0.16 mg/L.

Cross Creek is located in the peninsular part of the state. The stream NNC requires (1) no observable imbalance with Chla, algal mats or blooms, nuisance macrophyte growth, and algal species composition; and (2) either benthic invertebrate communities are healthy or AGM TN and TP concentrations measured in the stream do not exceed nutrient criteria in more than 1 of any 3 continuous calendar years. Nutrient criteria for this part of the state are 0.12 mg/L of TP and 1.54 mg/L of TN.

The revised numeric interpretations of the narrative nutrient criterion for TN and TP were based on watershed and receiving water modeling of lake conditions using natural background watershed conditions that resulted in the revised Chla criterion of 38 µg/L. Background TN and TP in-lake concentrations were derived from the natural background watershed simulations. Hydrological Simulation Program–Fortran (HSPF) was used to simulate flows and pollutant loads to Lochloosa Lake from the watershed. A second model (BATHTUB) simulated in-lake nutrient and chlorophyll conditions based on watershed inputs, meteorological conditions, and the physical characteristics of the lake. This approach established specific targets that are more representative of natural conditions in Lochloosa Lake and Cross Creek than the generally applicable TN, TP, Chla and stream floral metrics NNC. Because the flow in Cross Creek is dominated by the outflow from Lochloosa Lake, the same natural background target concentrations determined for the lake were used for the creek. Loads necessary to achieve the target concentrations were then determined from the model simulations. When these concentration targets are achieved, the nutrient loads going through Cross Creek will be the background condition loads. Therefore, both flora and fauna in Cross Creek will inherently be protected.

Assessment: The EPA determined that the selection of TN and TP loads of 78,163 kg/yr and 4,505 kg/yr, respectively, for Lochloosa Lake and 32,514 kg/yr and 1,601 kg/yr, respectively, for Cross Creek as site specific NNC representing natural conditions are appropriate. The watershed and receiving water modeling method used by the state to determine a site specific Chla criterion of 38 µg/L is an appropriate and defensible method.

5. Public Participation

Section 131.20(b) provides that states shall hold a public hearing when revising WQS, in accordance with provisions of state law and the EPA's public participation regulation (40 CFR part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

A public workshop was conducted by FDEP on August 4, 2016 in Gainesville, Florida, to obtain comments on the draft nutrient TMDLs for Lochloosa Lake and Cross Creek. The workshop notice indicated that these nutrient TMDLs, if adopted, constitute site specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C.,¹ that would replace the otherwise applicable NNC in subsection 62-302.531(2), for these particular waters. A public hearing on the proposed rule was held on April 21, 2017 in Tallahassee, Florida.

Assessment: FDEP has met the public participation requirements for this H1.

6. Certification by the State Attorney General

Section 131.6(e) requires that the state provide a certification by the state Attorney General or other appropriate legal authority within the state that the WQS were duly adopted pursuant to state law.

A letter from FDEP General Counsel, Frederick L. Aschauer, Jr., dated June 19, 2017 certified that the Lochloosa Lake and Cross Creek TMDLs were duly adopted as WQS pursuant to state law.

Assessment: FDEP has met the requirement for Attorney General certification for this H1.

7. Endangered Species Act Section 7 Consultation

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.

The existing default NNC for the waterbody received concurrence by U.S. Fish and Wildlife Service (USFWS) on July 31, 2013. USFWS provided concurrence with the EPA's programmatic consultation on site-specific nutrient criteria for FDEP on July 21, 2015 for any site specific nutrient criteria that are more stringent than the existing default nutrient criteria in place in the state of Florida for the waterbody. Because the site-specific criteria for TN and TP for Cross Creek and the site-specific criterion for TN in Lochloosa Lake in this H1 document are more stringent than the default criteria, an additional ESA section 7 consultation for this standards action is not required.

The site-specific criteria for TP and Chla in Lochloosa Lake is less stringent than the default criteria; thus, the EPA staff initiated informal section 7 consultation with USFWS Panama City Field Office staff via email from Katherine Snyder, WQS Coordinator, to Channing St. Aubin, Biologist, dated October 11, 2016. The EPA has concluded that the Agency's action to approve the revised TP and Chla H1 NNC for Lochloosa Lake would have "No Effect" because the threatened and endangered species identified by USFWS or their critical habitat are not present in the action area of Lochloosa Lake and Cross Creek (Oval Pigtoe Mollusk and Squirrel Chimney Cave Shrimp) or are not aquatic species (Wood Stork).

¹ FDEP recently revised the table of surface water criteria set out at section 62-302.530, F.A.C., adding parameters to the table to incorporate new human health criteria promulgated by the state in 2016. These additions resulted in the state narrative nutrient criteria being renumbered from paragraphs 62-302.530(48)(a) and (b), F.A.C., to paragraphs 62-302.530(90)(a) and (b), F.A.C. The new criteria have not yet been submitted to the EPA for review under the CWA and are not effective for CWA purposes. In this document, the EPA refers to the narrative nutrient criteria as paragraphs 62-302.530(48)(a) and (b).

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

Channing St. Aubin of the USFWS Panama City Field Office and Heath Rauschenberger of the North Florida Ecological Services Office were notified of the EPA's determination via email October 24, 2016.

Assessment: Since concurrence from USFWS is not needed on "No Effect" determinations, the EPA has met the ESA requirements for this action.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

II. TMDL Review

Section 303(d) of the CWA and the EPA's implementing regulations at 40 CFR part 130 set out the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for the EPA to determine if a submitted TMDL fulfills the legal requirements for approval under section 303(d) and the EPA regulations and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDLs required by the CWA and by regulation.

1. Description of Waterbody, Pollutant of Concern and Pollutant Sources

The TMDL analytical document must identify the waterbody as it appears on the state/tribe's 303(d) list, including the pollutant of concern. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for the EPA's review of the load and wasteload allocations, which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDLs, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and (4) explanation and analytical basis for expressing the TMDLs through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or Chla and phosphorus loadings for excess algae.

As mentioned in section 2.2 of the Report, the lake was verified as impaired for nutrients based on elevated annual average TSI values during the Cycle 1 verified period for the Group 1 basins (January 1, 1995–June 30, 2002). In the Cycle 2 verified period (January 1, 2000–June 30, 2007), the annual mean TSI values continued to exceed the listing thresholds. The impairment was reaffirmed in the Cycle 3 verified period (January 1, 2005–June 30, 2012) as shown in Table 2.1 of the Report. Cross Creek was verified as impaired both for nutrients, based on exceedances of annual average corrected Chla over the 20 µg/L assessment threshold, and for low DO with less than 5 mg/L in the Cycle 1 assessment as shown in Table 2.2. The impairment was reaffirmed in the Cycle 2 assessment. No Chla data were available for the Cycle 3 verified period to assess Cross Creek for nutrients. However, the DO impairment was reaffirmed.

There are no National Pollutant Discharge Elimination System (NPDES) permitted wastewater facilities in the Lochloosa Lake or Cross Creek watersheds. Although there are two Municipal Separate Storm Sewer System (MS4) permits, Alachua County and the Florida Department of Transportation (FDOT) District 2, that cover the urbanized area of Alachua County, no portion of the Lochloosa or Cross Creek watersheds are within the urban area.

Lochloosa Lake encompasses an area of 5,663 acres, 95% of which is designated as lake, with the remaining 5% designated as wetland areas. Cross Creek covers an area of 322 acres of which 30% is wetlands, 3% is freshwater streams, 16% is upland forests. Urban areas cover 45% with 20% being low density residential, 16% being medium density residential, 4% being high density residential, and 5% being urban and built-up area. The Lochloosa watershed drains an area of 56,186 acres. The largest land use in the watershed is upland forests at 50% followed by wetlands at 23%, freshwater areas at 10% and urban built-up and residential land uses comprising less than 5% of the watershed area. Nonpoint sources which are intermittent, rainfall-driven, diffuse sources of pollution including runoff from urban

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

land uses, agriculture, discharges from failing septic systems, and atmospheric deposition were also considered in establishing the TMDLs.

Assessment: The EPA concludes that FDEP has adequately identified the impaired waterbodies, the pollutant of concern, and the magnitude and location of the pollutant sources.

2. Description of the Applicable WQS and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable state/tribe WQS, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the statewide antidegradation policy. Such information is necessary for the EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable WQS is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

Lochloosa Lake and Cross Creek are Class III (freshwater) waterbodies, with designated uses of fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The Class III water quality criteria applicable to the verified impairments for these waters is the state of Florida's nutrient criteria in paragraph 62-302.530(48) (b), F.A.C. The nutrient TMDLs presented in this decision document will constitute site-specific numeric interpretations of the narrative nutrient criterion that will replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for Lochloosa Lake and Cross Creek.

FDEP determined that when the generally applicable Chla criterion for Lochloosa Lake of AGM of 20 µg/L was exceeded, the applicable TN and TP criteria of 1.27 and 0.05 mg/L, respectively, were also exceeded in multiple years as shown in Table 2.4 of the Report. Because FDEP does not intend to abate natural background conditions, it compared the proposed criteria to nutrient conditions established through a paleolimnological reconstruction of past conditions and a model-based prediction of natural background conditions to ensure that the proposed criteria are not lower than background conditions. As mentioned in section I-3 of this document, the NNC for Lochloosa Lake and Cross Creek established in the Report are 78,163 kg/yr for TN and 4,505 kg/yr for TP for Lochloosa Lake and 32,514 kg/yr for TN and 1,601 kg/yr for TP for Cross Creek, all expressed as long-term (7-year) averages of annual loads, not to be exceeded.

A Chla criterion of 38 µg/L, expressed as a long-term (7-year) average of the AGMs, not to be exceeded, is established for both the lake and creek. This approach is adequate given that Cross Creek is a short (1.5 mile) stream segment dominated by the outflow from Lochloosa Lake, and typical stream characteristics are not present making the evaluation of stream floral and faunal metrics inappropriate. Therefore, the Chla criterion which is most representative of the waterbody will replace all other default stream floral metrics and be protective of the designated use.

Assessment: The EPA concludes that FDEP has properly addressed its WQS when setting a numeric water quality target.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in the EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. The EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating WQS (40 CFR section 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 CFR section 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for the EPA's review of the load and wasteload allocations which are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 CFR section 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet WQS. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of WQS and will help in identifying the actions that may have to be undertaken to meet WQS.

Two water quality models were used to simulate water quality conditions in Lochloosa Lake. A watershed model, HSPF, was used to simulate flows and pollutant loads to Lochloosa Lake from the watershed. The original HSPF model for the Orange Creek Basin was refined by The Environmental Science Bureau of the St. Johns River Water Management District (SJRWMD), with FDEP's assistance, and used in developing the Lochloosa Lake TMDLs.

The BATHTUB Model was used to simulate in-lake nutrient and Chl a conditions based on watershed inputs, meteorological conditions, and the physical characteristics of the lake. AGM concentrations for Chl a , TN, and TP calculated from available water quality data were used to calibrate BATHTUB and guide the selection of nitrogen, phosphorus, and chlorophyll models. Estimated AGM concentrations for TN and TP were compared with observed in-lake concentrations and preliminary results suggested internal cycling and nitrogen fixation contributions and so the internal loading option was added to the BATHTUB model.

Once the nutrient targets were identified, the BATHTUB model was used to determine the allowable TN and TP loads that would meet the targets for each year. The TMDLs' long-term average loads represent a 59% reduction in TN and a 41% reduction in TP from the long-term average loads under current conditions. As noted earlier, the Cross Creek watershed is very small, and the discharge from Lochloosa Lake dominates water quality in Cross Creek. The Cross Creek TP TMDL average reduction of 31% and TN TMDL average reduction of 43% are based on load reductions for Lochloosa Lake and resulting water quality changes in the discharge from Lochloosa Lake into Cross Creek.

The site-specific numeric nutrient targets of 4,505 kg/yr TP and 78,163 kg/yr TN for Lochloosa Lake are representative of natural background conditions in Lochloosa Lake and reflect the best water quality expected for Cross Creek, given that discharge from Lochloosa Lake to Cross Creek will contribute on average 95% of the TP load and 97% of the TN load in Cross Creek. Instream concentrations for TP and TN are expected to be 0.055 and 1.15 mg/L, respectively.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

Critical conditions are addressed in section 5.3 of the Report. Critical conditions related to seasonal events, such as potential loading events in response to rainfall, are discussed in section 7 of this document.

Assessment: The EPA concludes that the loading capacity, having been calculated using the EPA reviewed water quality models and using observed concentration data and water quality targets consistent with numeric water quality criteria, has been appropriately set at a level necessary to attain and maintain the applicable WQS. The H1 is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

4. Load Allocation (LA)

The EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 CFR section 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 CFR section 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable WQS, and all nonpoint and background sources will be removed.

As stated in section 6.2 of the Report, a TN load reduction for Lochloosa Lake of 59% and a TP load reduction of 41% are required from nonpoint sources to achieve the WQS. Because the flow in Cross Creek is dominated by the outflow from Lochloosa Lake, these reductions would translate to a 43% TN load reduction and a 31% TP load reduction in Cross Creek.

FDEP believes that it may be possible to meet the targets before achieving the percent reductions as the LA may include loading from stormwater discharges regulated by FDEP and the water management district that are not part of the NPDES Stormwater Program. As mentioned in Appendix A of the Report, the state's water management districts may require stormwater treatment as part of stormwater pollutant load reduction goals (PLRGs).

Assessment: The EPA concludes that the LAs provided in the Report are reasonable and will result in attainment of the WQS.

5. Wasteload Allocation (WLA)

The EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 CFR section 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable WQS, and all point sources will be removed.

In preparing the wasteload allocations, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. However, it is necessary to allocate the loading capacity among individual point sources as necessary to meet the WQS.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the state/tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

Section 6.3.1 of the Report states that no WLA for wastewater discharges is provided in the TMDLs since there are no NPDES wastewater facilities that discharge directly to Lochloosa Lake or its watershed. Additionally, as stated in section 6.3.2 of the H1, although there are two permitted MS4s in the watershed, Alachua County and FDOT District 2, none of the urbanized areas covered by the MS4s are in the Lochloosa watershed. An MS4 permittee is only responsible for reducing the anthropogenic loads associated with stormwater outfalls that it owns or controls and is not responsible for reducing other nonpoint source loads in its jurisdiction. Hence no NPDES Stormwater WLAs were assigned.

Assessment: The EPA concludes that WLAs for wastewater or stormwater discharges are not applicable.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)). The EPA 1991 guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

The Report stated that an implicit MOS was used in the development of the Lochloosa Lake and Cross Creek TMDLs, consistent with the recommendations of the Allocation Technical Advisory Committee (FDEP 2001). The implicit MOS was used because the TMDLs were based on the conservative decisions associated with a number of the modeling assumptions in determining the assimilative capacity (i.e., loading and water quality response) for the lake. One such example of conservative decision in modeling which added to the MOS was that the HSPF simulations for natural background conditions were carried out for the 2004–11 period. However, the results from 2011 were not used in the calculation of a long-term average TMDL, since they represented a second consecutive low-rainfall year and the percent reduction for TN and TP would have been less than the current reductions had the 2011 data been included in the average. The watershed loads for 2011 represented less than 7% of the input for TP and less than 1% of the input for TN. Additionally, the TMDLs were developed using water quality results from both high and low rainfall years during a period when lake Chla concentrations tended to be inversely related to rainfall. Hence the TMDLs would be protective for all seasons, adding to the implicit MOS.

Assessment: The EPA concludes that the H1 incorporates an adequate margin of safety.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)).

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

The assimilative capacity of the lake was estimated based on annual conditions rather than critical/seasonal conditions, because the methodology used to determine assimilative capacity would not work well for short-term assessment and the methodology used to determine impairment itself was based on annual condition AGMs and arithmetic means. However, the BATHTUB model simulations spanned the 2004–10 period which included both wet and dry years (2006 and 2007 were dry years, 2008 and 2009 were average years, and 2004 and 2005 were wet years) indicating that due consideration was given to seasonal variations and that the annual conditions used for modeling would be protective throughout all seasons.

Assessment: The EPA concludes the H1 allocations ensure protection of WQS throughout all seasons.

8. Monitoring Plan to Track TMDL Effectiveness

The EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions, and such a TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of WQS. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions, and such a TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of WQS.

The second phase of the Orange Creek Basin Management Action Plan (BMAP), which was adopted by Secretarial Order on July 2014, focuses on identifying the nutrient sources that cause the impairment of the basin's lakes, which include Orange Lake and Lochloosa Lake (a tributary of Orange Lake). The adaptive management process for restoration would include incremental implementation of projects to reduce loadings, and simultaneous monitoring of impaired waterbodies to evaluate progress and make adjustments, as needed, to meet the TMDLs. Currently the SJRWMD conducts routine bimonthly monitoring of Lochloosa Lake at one station and also conducts routine bimonthly monitoring at one station in Orange Lake which is downstream of Cross Creek.

Assessment: Although not a required element of the EPA's TMDL approval process, FDEP and several stakeholders will conduct monitoring activities to evaluate the progress toward attainment of WQS. The EPA is taking no action on the monitoring plan.

9. Implementation Plans

On August 8, 1997 Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with states/tribes to achieve nonpoint source load allocations established for 303(d) listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist states/tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by the EPA, they help establish the basis for the EPA's approval of TMDLs.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

The implementation of TMDLs in Florida occurs through specific requirements in NPDES and MS4 permits, and, as appropriate, through local or regional water quality initiatives or BMAPs. BMAPs are developed by FDEP or local entities and integrate appropriate management strategies applicable through existing water quality protection programs. As mentioned in chapter 7 of the Report, the nutrient TMDLs for Lochloosa Lake will be addressed during the second phase of the Orange Creek BMAP and actions in that TMDL will be identified and implemented.

As specified in Appendix B of the Report, to address the issue of nonpoint source pollution, FDEP implements statewide regulations by requiring new development and redevelopment to treat stormwater before it is discharged. The state's water management districts are also required to establish stormwater PLRGs and adopt them as part of a Surface Water Improvement and Management plan, other watershed plan, or rule. PLRGs are a major component of the load allocation part of a TMDL.

Assessment: Although not a required element of the TMDL approval, FDEP discussed how information derived from the TMDLs analysis process will be used to develop PLRGs and implement best management practices that support implementation of the TMDLs. The EPA is taking no action on the implementation portion of the Submission.

10. Reasonable Assurances

The EPA guidance calls for reasonable assurances when TMDLs are developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDLs to be approvable. This information is necessary for the EPA to determine that the load and wasteload allocations will achieve WQS.

In a waterbody impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, states/tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in state/tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

The BMAP mentioned in the earlier paragraph provides for phased implementation under subparagraph 403.067(7)(a)1, Florida Statute (F.S.), and this adaptive management process will continue until the TMDLs are met. The phased BMAP approach allows for incrementally reducing loadings through the implementation of projects, while simultaneously monitoring and conducting studies to better understand water quality dynamics (sources and response variables) in each impaired waterbody. It also allows for actions to be taken in other waterbodies that will improve water quality in the TMDL waterbody. Subsequent five-year BMAP management phases will continue to evaluate progress and make adjustments or add new projects, as needed, to meet the TMDLs. BMAPs are developed and implemented under section 403.067, F.S., and adopted by FDEP Secretary as legally enforceable.

Assessment: The EPA considered the reasonable assurances contained in the Report. Reductions for nonpoint sources are expected to occur as a result of the incentive and voluntary programs already in place.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

11. Public Participation

The EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each state/tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 CFR section 130.7(c)(1)(ii)). In guidance, the EPA has explained that final TMDLs submitted to the EPA for review and approval must describe the state/tribe's public participation process, including a summary of significant comments and the state/tribe's responses to those comments. When the EPA establishes a TMDL, the EPA regulations require the EPA to publish a notice seeking public comment (40 CFR section 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where the EPA determines that a state/tribe has not provided adequate public participation, the EPA may defer its approval action until adequate public participation has been provided for, either by the state/tribe or by the EPA.

FDEP conducted a public workshop on March 31, 2015 to obtain comments for Lochloosa Lake and Cross Creek. A public hearing for Ocklawaha River Basin TMDLs (62-304.500, F.A.C.) was held on February 3, 2017. A notice of rulemaking to establish the TMDLs and to announce a rulemaking workshop to receive public comments was published in the Florida Administrative Record Volume 42, Number 141, July 21, 2016. A notice of public workshop to be held on August 4, 2016 to obtain comments on the revised draft nutrient TMDLs was posted on the FDEP TMDL website and announced in the local newspaper (The Gainesville Sun).

Written comments were received from one entity on the Lochloosa Lake TMDLs pertaining to the significance of internal nutrient cycling, how variations in the morphological characteristics of the lake were addressed in the model, and assumptions in the background condition. Some clarification was requested in how septic tank nutrient contributions were taken into consideration. FDEP responded to all comments, ran additional data analyses, and updated the language in the TMDL report as appropriate.

Assessment: The EPA concludes that the state involved the public during the development of the H1, provided adequate opportunities for the public to comment on the Report, and provided reasonable responses to the comments received.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to the EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under section 303(d) of the CWA for the EPA review and approval. This clearly establishes the state/tribe's intent to submit, and the EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody and the pollutant(s) of concern.

Assessment: Accompanying the state's May 2017 final TMDL for nutrients was a submittal letter dated June 19, 2017 from Frederick L. Aschauer, Jr., General Counsel, FDEP, requesting the review and approval of the nutrient TMDLs for: Wacissa River, Wacissa Springs, Crescent Lake, Lake Denham, Lake Weir, Marshall Lake, Lochloosa Lake, Cross Creek and Lake Roberts.

EPA HIERARCHY 1 REVIEW DOCUMENT

Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) /Ocklawaha River Basin – Nutrients

III. Conclusion

The Water Protection Division is **APPROVING** the H1 NNC and TMDLs addressed by this decision document in accordance with sections 303(c) and 303(d) of the CWA, as consistent with the CWA and 40 CFR parts 131 and 130, respectively.

The H1 NNC presented in this decision document will constitute the site specific numeric interpretation of the NNC set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable numeric criteria for TN, TP, and Chla in subsection 62-302.531(2) for Lochloosa Lake and Cross Creek, pursuant to paragraph 62-302.531(2)(a), F.A.C. Based on the chemical, physical and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that all of the aforementioned H1 NNC provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 CFR 131.11.

Therefore, the revised TN and TP criteria for Lochloosa Lake are 78,163 kg/yr for TN and 4,505 kg/yr for TP, expressed as long-term (7-year) averages of annual loads, not to be exceeded. The revised TN and TP criteria for Cross Creek are 32,514 kg/yr for TN and 1,601 kg/yr for TP, expressed as long-term (7-year) averages of annual loads, not to be exceeded. A revised Chla criterion of 38 µg/L, expressed as a long-term (7-year) average of the AGMs, not to be exceeded, is established for both the lake and creek. The revised Chla criterion will also replace all other default stream floral metrics for Cross Creek. All other criteria applicable to this waterbody remain in effect, including other applicable criteria at 62-302.531(2)(b). The requirements of paragraph 62-302.530(48) (a), F.A.C., also remain applicable.

Furthermore, after a full and complete review, the EPA finds that *Final H1 for the Nutrient TMDL for Lochloosa Lake (WBID 2738A) and Cross Creek (WBID 2754) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Criterion* satisfies all of the elements of approvable TMDLs. This approval is for two TMDLs addressing two waterbodies for use impairments due to nutrients.